RiverPro is a interactive program that creates products such as RVS, FLS and FLW. This write-up will show the Hydrologist how templates work in Riverpro.

When a forecaster selects the Product | Create menu option in RiverPro, RiverPro uses the selection of sections and templates currently defined in the product settings to build your product. The product settings are modified when you click on the various buttons on the Settings|Modify Section window. If you chose not to modify the product using the Settings|Modify Section window, then RiverPro uses the default product content.

RiverPro uses the specified template for a particular product section. Riverpro uses the specified template from the template file to provide instructions on format and data retrieved to build your product.

When you modify a the settings using the Settings|Modify Section Window you can select the templates you wish to use. Clicking on the product section buttons in the Settings Option will give you a window with a choice of templates for that section. You can select templates for a product you currently are making, or you can save the choices in a new settings file, which you can name for later use.

Template files are ASCII files for each section of your product and can be edited with any text editor. Each file has a variety of templates for you to use and you can add more to each file. The following is a list of the template files and what you can do with them;

header.tpl - This is the header for your product.
basis.tpl - If you wish to include a basis section, this is the place were basis templates are kept.
summary.tpl - These template are various summaries for your data by river groups (i.e collections of forecast points).
tabular.tpl - These templates allow you to list your data in a tabular format.
roundup.tpl - This is the narrative presentation of information about your points and data.
impact.tpl - These templates let you set up different impact statements for certain values of data that discusses the impact of flooding.
compare.tpl - These templates allow you to specify comparisons with historical floods.
cta.tpl - These templates allow you to include one or more call to action statements.

Variables appear in the template phrases and conditional statements. The variables are surrounded by angle brackets, <*Variable name* >, and are the entities that bring information from the database to your product. An example of some variables are <*River*> for river name, <*FldStg*> for flood stage and <*MaxFcstStg*> for the maximum forecast stage. The variables are described in detail in the RiverPro Reference Manual. The # symbol is a comment identifier. A line with this symbol at the beginning will not get into your final product.

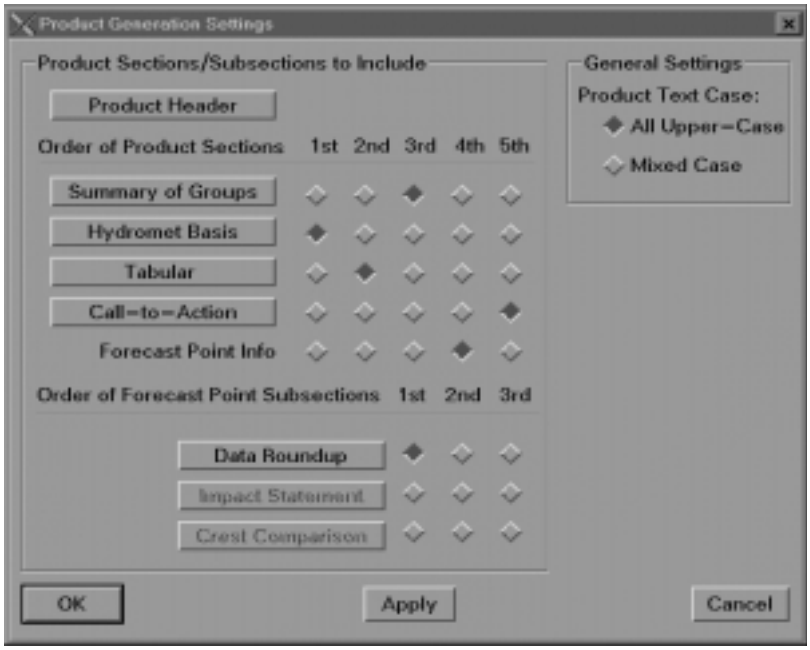
Now before we move on, let's talk about some of the template keywords we will use.

name is required on all templates that gives the name of the template.
condition is required on templates with conditional control statements and specificers.
phrasestr is used when you want a phrase written to your product.
varlist will be used to list variables and should have an accompanying format line.
format has the format specifiers for variables with a varlist.
spectime is used to define a specific time for observed or forecast stage variables.
literal, fp_id, miscwrt and grpname are used in the tabular templates.

More keywords and details on how they are used can be found in the RiverPro Reference Manual.

Now for our example. We will look at some of the templates in template files from our selections on the Settings Option Window displayed here(Fig 1). As you can see we have chosen to have our product all upper case. Clicking on the buttons with the product sections names select the individual templates and clicking on the diamonds set the templates in an order you wish for our RVS product.

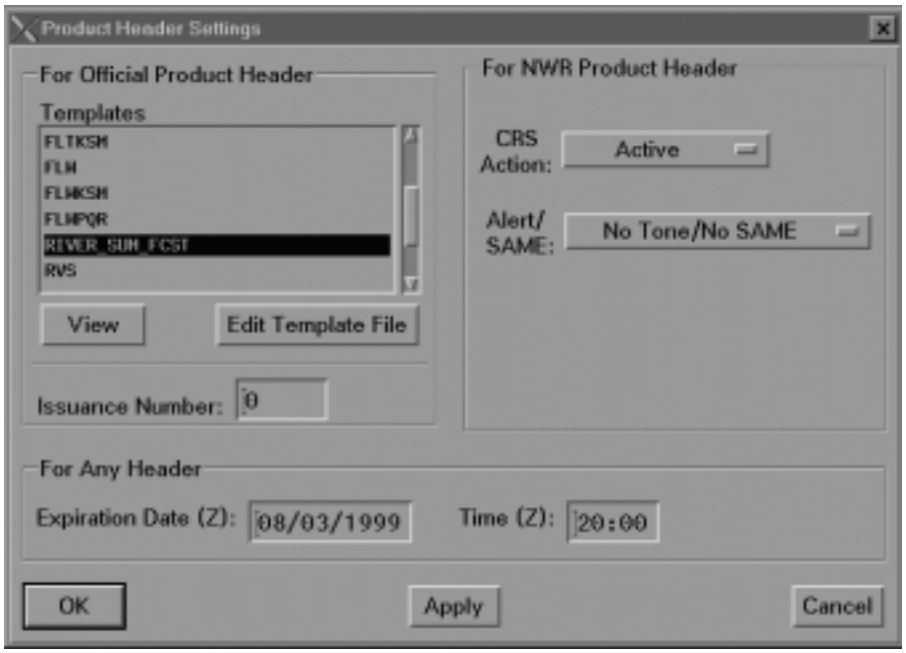
Figure 1



Product Header

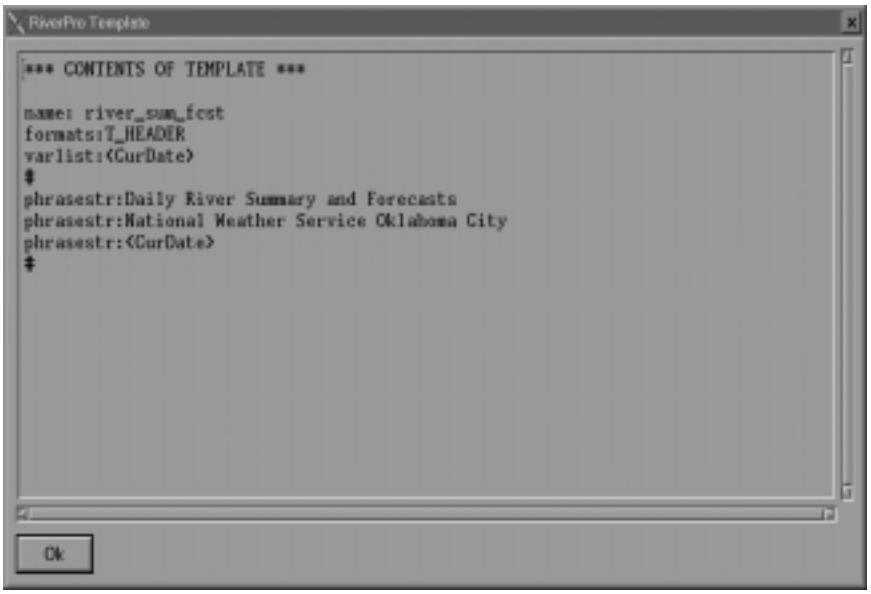
The first section is the Product Header. This section is always included in the product. If you click on the Product Header button, you will see the following window(fig2).

Figure 2



In this case, we chose to use the RIVER_SUM_FCST header template. Since we are not going to issue this particular product on the NOAA radio then we can leave the "For NWR Product Header" alone. We chose an expiration date of 08/03/1999 at 20:00 UTC for the product to expire. Default expiration times are defined in Hydrobase under the Setup| Riverpro General Parameters window. It is assumed that we will issue a new product by the expiration time. Starting with AWIPS Build 4.2.3, you can edit the template by clicking on the "Edit Template File" button. A text editor will appear and you can find and edit the RIVER_SUM_FCST template. Right now, we will just view it(Fig 3).

Figure 3



Let us look at parts of the our sample header template. Shown below is the template with **name** 'river_sum_first' from the header template file. Next to the template listing is what the header will look like in your final product.

```
name: river_sum_fcst
formats:T_HEADER
varlist:<CurDate>
#
phrasestr:Daily River Summary and Forecasts
phrasestr:National Weather Service Oklahoma City
phrasestr:<CurDate>
```

```
DAILY RIVER SUMMARY AND FORECASTS
NATIONAL WEATHER SERVICE OKLAHOMA CITY
354 PM CDT MON AUG 02 1999
```

name: river_sum_fcst
This is the name for this particular template. It is how Riverpro identifies the template in the template file. You can have many templates to customize your products.
formats: T_HEADER
This is a format for the time which will be displayed. In this case the time will be displayed in a form like "354 PM CDT MON AUG 02 1999". There are many different forms for displaying time and date which are described in the RiverPro Reference Manual,Appendix A.
varlist:<CurDate>
This is the variable for the above format. It is the current time and day. The format will use the above "T_HEADER" format. This variable will be displayed by being included in a phrasestr below.
#
This is a comment mark.
phrasestr:Daily River Summary and Forecasts
The phrasestr is what is actually put on the product. This is our product title in the product header.
phrasestr:National Weather Service Oklahoma City
This will put the string identifying the location of your office in the product header.
phrasestr:<CurDate>
This is the date variable that we have defined above. Now the phrasestr command will put it in your product header.
#
This is another comment.

Basis Section

Now let's look at the basis section. There is one template in the basis file.

```
#
name: default
phrasestr:...insert Basis Section Here!!.....
```

```
...INSERT BASIS SECTION HERE...
```

Again, the template is on the left and what shows up in the product is on the right. We want to write a message telling a forecaster or hydro_met Tech to insert a basis using the text editor in Riverpro after the product is created. This phrasestr will just output the sentence to the product.

Tabular Section

Let's look at the tabular template and see how keywords are utilized for our example product. Below is the rvs_fcst template from the tabular.tpl file and following is what is displayed on the product.

```
name: rvs_fcst
grpname: skip
literal:      River Summary and Forecasts
literal:RIVER STATION         FLOOD     7AM CURRENT    FORECAST STAGEGE
literal:                      STAGE       STAGE         AT 7 AM
#
formats:X36 T_AW  X13  T_AW
varlist: <Day0> <Day1>
miscwrt:
#
formats: X2 S10 X11 F5.2 X7 F5.2 X11 F5.2
varlist: <IdName> <FldStg> <SpecObsStg> <SpecFcstStg>
specstagetime: TODAY 12:00  0 0 3  +1 0 3
fp_id:PRKO2
fp_id:GTRO2
fp_id:DOVO2
#
```

```
      River Summary and Forecasts
RIVER STATION         FLOOD    7AM CURRENT    FORECAST STAGEGE
                      STAGE        STAGE            AT 7 AM
                                    MON              TUE
LOWER CIMARRON RIVER
     PERKINS          17.00        15.10            15.10
     GUTHRIE          13.00         3.39             5.70
     DOVER            17.00        10.35            11.50
```

name: rvs_fcst
This is the name of the template. This name would be the name specified in the product settings for the tabular section for the product.
grpname: skip
This keyword means to put a blank line anytime a forecast group name is written to the output product.
literal: River Summary and Forecasts
The text that follows a literal: is output in the final product as it is written.
literal:RIVER STATION FLOOD 7AM CURRENT FORECAST STAGEGE
The text that follows a literal: is output in the final product as it is written. In this case this is the header of a table of river stages. As you may notice there is an error. What is in a literal will get into the product.
literal: STAGE STAGE AT 7 AM
The text that follows a literal: is output in the final product as it is written. In this case this is the header of a table of river stages
#
formats:X36 T_AW X13 T_AW
This line outputs 36 spaces and the formats for Day0 and Day1. Day0 is today and Day1 is tomorrow. There are 13 spaces between the days. The Days are printed using the T_AW format. The T_ is a date/time format, A means abbreviate and W means weekday. This would print WED for Wednesday, for example.
varlist: <Day0> <Day1>
These variables Day0 and Day1 are for each day we wish to print. Riverpro uses the system time to determine each day. The format above is used in printing the days.

miscwrt:
The formats and varlist are processed together when this keyword is processed. This is referred to as a "miscellaneous write" (miscwrt) because it writes information not specific to a forecast point.
#

formats: X2 S10 X11 F5.2 X7 F5.2 X11 F5.2
These are the formats associated with an upcoming variable list. This keyword and format tokens specifies how your data will be displayed. The first token is X2 for two blank spaces. Then follows; (S10) a string of 10 characters, (X11) 11 blank spaces (F5.2), a floating point number of 5 total digits with 2 digits on the right side of the decimal point, (X7), 7 blank spaces then two more floating point numbers(F5.2) like the first one separated by 11 blank spaces(X11).

varlist: <IdName> <FldStg> <SpecObsStg> <SpecFcstStg>
These are the variables that specify the data for your product. They are using the formats defined immediately above. The formats are shown in parenthesis

<IdName> the forecast point name (S10)
<FldStg> The flood stage of a forecast point(F5.2)
<SpecObsStg> a specific observation stage (F5.2). This observation stage uses the specstagetime keyword that follows. This keyword defines the Time of the observation.
<SpecFcstStg> a specific forecast stage (F5.2). This is a forecast stage at a specific time using the specstagetime keyword that follows.

specstagetime: TODAY 12:00 0 0 3 +1 0 3
This keyword and specifiers define the times for observed and forecast stages in our example. We want an observed stage at 12:00 UTC and a forecast stage at 12:00 UTC the next day. By the way, in AWIPS Build 4.2.2 and AWIPS Build 4.1 these times will be Local Standard Time. In AWIPS Build 4.2.3, the times will become UTC.
After the keyword "specstagetime" , the TODAY 12:00 means we begin with today's date and time of 12:00 UTC as a base time and day. The two sets of three digits specify an offset time and day from our base time and day.
In the first set we have 0 which means today that is 0 days from the the base day. Then we have another 0 which means 0 hours from the base time of 12:00 UTC . Finally we have the 3 which is a three hour window before and after the base time. 12:00 UTC data that is stored in the database within the window will be used. The closest value in the window by the time of 12:00 UTC data will be put in the product. + and - signs can be used. So for the next set of three digit values we have; +1 for one day plus from the base day i.e. tomorrow; 0 for the offset from the base hour i.e 12:00 UTC and 3 for a 3 hour window before and after the base time ie from 09:00 UTC to 15:00 UTC.

fp_id:PRKO2
fp_id:GTRO2
fp_id:DOVO2
This specifies which forecast point to display data for and triggers the output. Order these so as to order your forecast points in a specific way in your product. You can list them using fp_id keywords.
#

This comment marker shows the end of the tabular template.

Summary Section

Now we will examine the summary template which is the third selection on our "Product Generation Settings" window. Below is the template first and then what is printed on the RVS product second.

```
name: Flood_cim
# checks to see if the cimmeron river has any flooding
condition: ( ( <GrpObsFound> EQ TRUE ) AND ( <GrpOMFCat> EQ 0 ) )
phrasestr: The <GrpIdName> has no flooding.
#
```

THE LOWER CIMARRON RIVER HAS NO FLOODING.

name: Flood_cim
This is the summary template name for this template.
checks to see if the cimmeron river has any flooding
This is comment to say what this template is about.

condition: ((<GrpObsFound> EQ TRUE) AND (<GrpOMFCat> EQ 0))
This is a conditional statement. We are testing to see if there is any flooding on the selected river (in this case the Cimmeron).
First we will test to see if there is at least one observation for a particular group in the database. <GrpObsFound> is a flag that indicates at least one observed stage was processed for the forecast group. We want it to be true. The observation is in your database. So (<GrpObsFound> EQ TRUE) is true
We combined the two tests with "AND" so that both would have to be true, for the entire condition to be true. The second test is if there is flooding. <GrpOMFCat> is a number of the maximum stage category. No flooding is 0. So if there is no flooding <GrpOMFCat> is 0.
So for the next phrase string to print the condition would have to be totally true. That is there has to be at least one observation and there has to be no flooding anywhere in the group. TRUE AND TRUE equals True. If this condition is true then the phrasestr that follows is printed in the RVS product. Otherwise, nothing is printed.

phrasestr: The <GrpIdName> has no flooding.
This phrase string prints out the string with the group Id name, in this case the lower Cimmeron River.
#
This marks the end ot this template in the summary.tpl file.

Data Roundup Section

Now for the 4th selection on our "Product Generation Settings " window. This is the "Forecast Point Info" button. From that button we move down and select "Roundup" as the first selection. This will be from the roundup.tpl file and the roundup template is called canoe. Following is the canoe template and what is written to the product.

```
name: canoe
condition: ( ( <ObsStg> GT 2.00 ) AND ( <ObsStg> LT 15.00 ) )
phrasestr: The <River> is navigable for canoeists at <IdName>.
```

```
THE CIMARRON RIVER IS NAVIGABLE FOR CANOEISTS AT GUTHRIE.
THE CIMARRON RIVER IS NAVIGABLE FOR CANOEISTS AT DOVER.
```

name: canoe
This is the name of the template that appears in the roundup.tpl file.
condition: ((<ObsStg> GT 2.00) AND (<ObsStg> LT 15.00))
This is another test. We want the string below to print in the product if the river stage is above 2.00 ft and less than 15.00 feet. Otherwise, nothing will be added to the product. <ObsStg> is the observed stage at the forecast point.
phrasestr: The <River> is navigable for canoeists at <IdName>..
This is the phrase string that would be printed in the product if the above condition is true. This time we use the River name <River> and the forecast point name <IdName>.
#
This marks the end of the template.

Call To Action Section

Now we look at the call to action template called "noaaradio". This template is in the cta.tpl file in the /awips/hydroapps/whfs/local/data/app/riverpro directory. This is an easy example. So we will just show the "noaaradio" template below with the output on the RVS product following.

```
name: noaaradio
phrasestr:Stay tuned to developments by listening to NOAA Weather radio...
```

```
STAY TUNED TO DEVELOPMENTS BY LISTENING TO NOAA WEATHER RADIO...
```

Now we have completed our description of the RVS example product we wish to create using RiverPro.

This is what our product would look like:

DAILY RIVER SUMMARY AND FORECASTS
NATIONAL WEATHER SERVICE OKLAHOMA CITY
354 PM CDT MON AUG 02 1999

...INSERT A BASIS SECTION HERE!...

River Summary and Forecasts

RIVER STATION	FLOOD STAGE	7AM CURRENT STAGE MON	FORECAST STAGEGE AT 7 AM TUE
LOWER CIMARRON RIVER			
PERKINS	17.00	15.10	15.10
GUTHRIE	13.00	3.39	5.70
DOVER	17.00	10.35	11.50

THE LOWER CIMARRON RIVER HAS NO FLOODING.

THE CIMARRON RIVER IS NAVIGABLE FOR CANOEISTS AT GUTHRIE..

THE CIMARRON RIVER IS NAVIGABLE FOR CANOEISTS AT DOVER.

STAY TUNED TO DEVELOPMENTS BY LISTENING TO NOAA WEATHER RADIO...

Now we will look at the GUI's on RiverPro for the creation of the above product. Here is the RiverPro root window (fig 4). We have selected our RVS statement as a product.

Figure 4

Now we select “Forecast points to include” from the main window and the window below left appears(fig 5). This window is called “Select Locations to Include. We can now select our forecast points we wish to be in the RVS or click “Recommended for Current Product”. Before AWIPS build 4.2 the button will say “Recommended”. In this case we will just pick our three forecast points along the Cimmeron River.

Figure 5

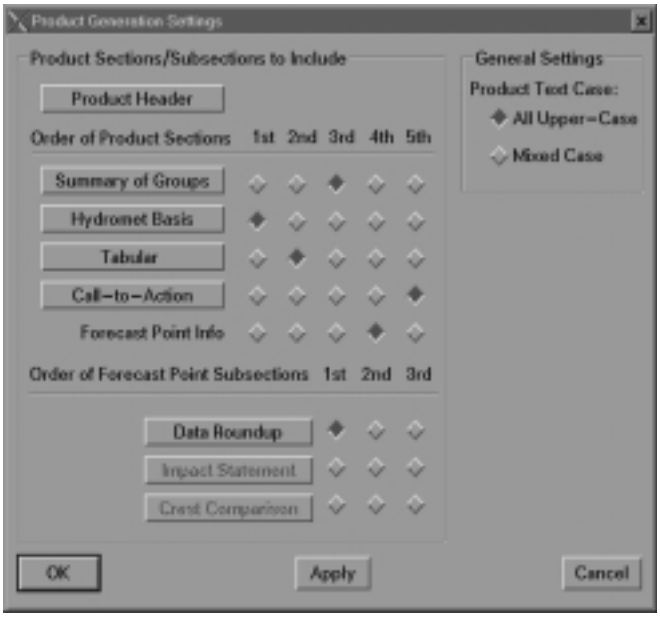


Figure 6

Then we select the sections and subsections we wish to have in our RVS product. The GUI we used is “Product Generation Settings” (Fig 6). We can click on any of the buttons for each section and select templates that we want for that section.

This brings up an important issue. If you have a product which always contains the same set of points(e.g. a daily river summary), you can save the product setting for that product that with the a list of forecast points permanently defined. This window is called the “Save Product Settings” (Fig 7). You can save a new set of information with product name and description. Here we have clicked the little box for “Save Instructions for Including Specific Forecast Points”. Click “Ok” to save this information.

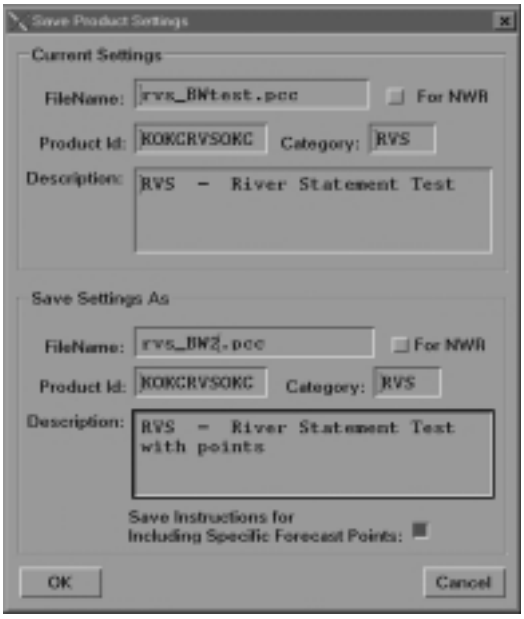


Figure 7

These settings will generate a product with the previously selected forecast points. This will be a permanent .pcc file so every time you select this product and create the RVS statement, it will have the same forecast points. This will also keep all the sections you have selected to be in the product. We have highlighted this product in the "Riverpro Root Window in the Figure 4 above.

Bill Wilson
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